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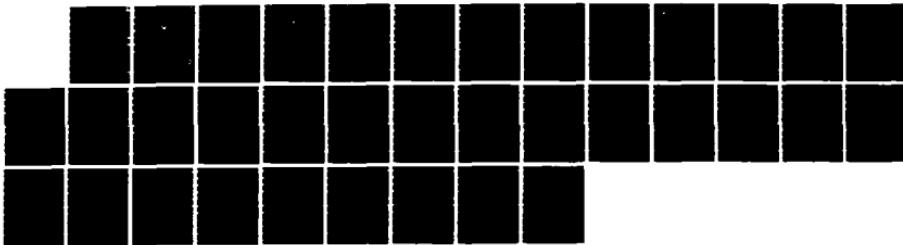
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AIR COMMAND AND STAFF COLL MAXWELL AFB AL J L BAILEY
1987 ACSC-87-0145

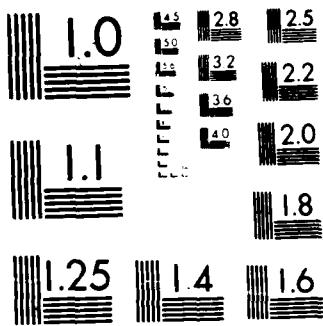
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STUDENT REPORT

ECONOMICS OF DEFENSE
THE SOVIET MILITARY BUDGET

MAJ JACK L BAILEY, JR 87-0145

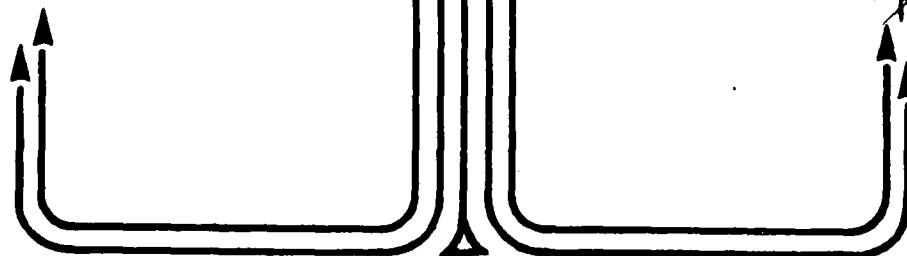
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TITLE ECONOMICS OF DEFENSE - THE SOVIET DEFENSE BUDGET

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SPONSOR COLONEL CALVIN R JOHNSON, AWC/NP

Submitted to the faculty in partial fulfillment of
requirements for graduation.

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) This report looks at the trend of the Soviet economy in recent years in an attempt to relate the condition of the general economy to the size of the Soviet defense budget. It highlights the difficulty in quantifying the Soviet defense budget and what attempts have been made to establish cost estimates.												
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PREFACE

This research paper casts some light on the relationship between the general health of the Soviet economy and the sizing of the Soviet defense budget. While it leaves many questions unanswered, it does address some of the relationships between the two as well as the requirements for change which the Soviets are now attempting to address.

I would like to thank my ACSC advisor, Lt Col Mack Foster, for his assistance. Additionally, I would like to thank my sponsor, Colonel Calvin R. Johnson, AWC/NP, for his energetic advice and sources of information on the subject.

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ABOUT THE AUTHOR

Major Jack Londy Bailey, Jr., USAF, received his commission as a Distinguished Graduate of the AFROTC program at San Francisco State University in June 1972. He earned his Bachelor of Arts degree in Broadcasting in 1971 and later earned his Master of Business Administration from Central Michigan University in 1981. His career began at Wurtsmith AFB, Michigan in 1972 as a Management Analysis Officer in the Comptroller career field. He was then assigned to HQ AFOSI, Washington D.C. from 1975 to 1979 as the Division Chief, Management Analysis. He then entered the Budget field upon his transfer to HQ AFSC, Andrews AFB, Maryland from 1979 to 1982. From 1982 to 1983, he served as the Comptroller to the 7241 Air Base Group, Izmir, Turkey. Upon completion of that short tour he served as Chief, Operations and Maintenance Support Branch, Directorate of Budget, Comptroller, HQ USAFE, Ramstein AB, Germany, from 1983 to 1986. Having been in the Comptroller field for 15 years, and the budget specialty for nine years, he is familiar with the difficulties of trying to buy force requirements with limited financial resources. His interest in the Soviet defense budget casts some light on the difficulties that the Soviets are now facing and their prospects for the future.

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REPORT NUMBER 87-0145

AUTHOR(S) Major Jack L Bailey, Jr

TITLE Economics of Defense - The Soviet Defense Budget

I. Purpose: To evaluate the dependency of the Soviet military budget on the relative health of the general Soviet economy.

II. Problem: The secrecy with which the Soviet Union conducts its business (particularly on defense matters) presents a unique problem for Western analysts in analyzing Soviet actions. Although the United States' intelligence community has devised several techniques for accomplishing cost analysis, no figure is guaranteed to be accurate - perhaps only an approximation. The world has viewed the poor performance of the Soviet economy since the 1970's which occurred at about the same time that the Soviet defense spending apparently leveled off. Is the general health of the Soviet economy a factor in determining the size of their defense budget or are they totally separate entities?

III. Data: The Soviet Union has consistently spent a larger share of its Gross National Product on defense than the United States. In the past, it had been viewed that the Soviets chose to spend for defense, first and then for the general economy, second. The Soviet Union used its excellent supply of easily obtainable natural resources and a large workforce to rebuild from the ravages of World War II. Whenever the Soviets have suffered from low

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productivity or a need to build up their military might they have answered by throwing additional resources and people into production. In studying the Soviet system it becomes apparent that the Soviet civilian and military economy are, in fact, one. The easily obtainable natural resources are now scarce. It will take significant capital and time before the difficult-to-obtain resources can be developed. As a result of the more than 20 million deaths that they suffered during World War II, there are no prospects for an increased workforce beyond the turn of the century. This now leaves the Soviets in a difficult position of not having the resources to increase defense, unless a conscious decision is made by the Soviet leadership to degrade the standard of living of their people even further.

IV. Conclusion: While the Soviet defense spending did decrease to only a 2 percent annual growth rate between 1976 and 1982, it still remained at a significantly higher level than United States defense spending as a percent of the Gross National Product. In other words, the Soviets still have a comfortable margin of defense expenditure capability. However, the most pressing problem is the lack of "easy" resources and workforce. The productivity of the average Soviet worker is dismally low. Without incentives to increase this productivity, and therefore produce more "bang" for the rouble, the Soviet Union may well have realized the end to its dramatic post-WWII growth. This may result in the Soviets having to negotiate down on defense spending while trying not to let the annual rate of economic growth per capita fall below one percent.

V. Recommendation: That the USAF officer should take an active interest in the study of the Soviet Union in his/her particular area of expertise in order to better understand the actions of "The Bear."

Chapter One

INTRODUCTION

Frederick Engels, who co-authored the Communist Manifesto with Karl Marx, stated that, "Nothing is as dependent on economic conditions as an Army or Navy" (9:7). The purpose of this paper is to evaluate the dependency of the Soviet military budget on the relative health of the general Soviet economy. Due to the secrecy of the Soviet society this is not an easy task. However, an evaluation of the costing methodologies, a look at unclassified economic trends, and a discussion of the constraints/limitations of the Soviet system in light of current real world events should provide better insight into the domestic and military Soviet budget relationships.

Several problems and limitations surround this attempt. First, the ability to establish an absolutely accurate figure on the size of the Soviet defense budget, is not possible due to the degree of secrecy that the Soviets apply to their economic program. However, close estimates can be made. The intelligence community uses several estimating techniques using dollar and rouble factors within various formulas. This will be discussed more later. While the resulting figures from the Central Intelligence Agency (CIA) and the Defense Intelligence Agency (DIA) do not always agree, normally they will be close and will reflect the same general trend. General conclusions can be drawn from these trends.

Second, published Soviet Five-Year Budgetary plans have little to do with single year financial execution. The closed Soviet economic system and the resulting soft rouble currency creates a pricing system which does not reflect free market pressures but, rather, reflects commodity pricing through distribution.

The understanding of the Soviet budget and its execution is important to our national security. Defense planners develop force structures that reflect the United States' defense needs based upon known or perceived Soviet threats. Comparisons of Soviet and United States defense spending are a driving force behind our justification for additional dollars. A lack of a public forum in the Soviet Union, similar to the US Congressional hearings and debates,

where defense budgets are debated compound our own difficulties in substantiating annual defense expenditures. However, recently we are not the only ones taking a close look at the Soviet budget. New world challenges and realities have forced the Soviets themselves to take a closer look at some old economic issues within their own system.

Recent changes in the Soviet leadership have resulted in surprisingly creative proposals aimed at reducing the arms race with the United States. Concurrently, recent downward trends in the Soviet economy have prompted Secretary General Gorbachev to present a Fifteen-Year Plan of economic development to the Soviet Union's 27th Party Congress (8:615). Gorbachev is faced with the reality that the Soviet Union is losing pace against Japan and the U. S. in high technology development and that the Soviet economic output is actually declining (7:36). These issues and more are causing an historic internal review of the Soviet Union's economic and military policies by the Party apparatus. The Soviets may not be ready to repudiate the ideologies of Marx and Lenin, however, basic changes in structure, attitude, and emphasis may well have to be made. How does the Soviet military relate to their economic situation? It is becoming more apparent to the military that the quote by Engels and the beginning of this chapter stating that the dependence of a sound military relies on the economic health of the state is becoming truer than we have perhaps seen in the past. These issues will be discussed in subsequent chapters in an attempt to evaluate the effects that the Soviet economy has on the sizing of the military budget.

Chapter Two

COSTING METHODOLOGIES AND PROBLEMS

Costing of Defense. The ability to calculate the size of the Soviet defense budget is critical to our understanding of the trends in the Soviet defense expenditures. The CIA first released its estimates on Soviet military spending back in 1974. Since then they have revised the methods by which they calculate the Soviet spending on three occasions.

In 1976, a realization that the defense industry output was significantly below what was earlier estimated caused the agency to revisit and double its rouble estimates (dollar estimates were not affected) (5:34).

During 1983, the agency reevaluated the 1979 to 1982 estimates predicting a 4 to 5 percent annual growth rate. The CIA concluded that the rate that the Soviets were developing military hardware (as opposed to capital improvements) was much lower than US analysts had expected over the time period of 1979-82. The new growth rate was established at a 2 percent figure (5:34).

In 1986, the CIA again revised the methodology since the rate of military equipment accession, as determined by the agency, was again lower than had been earlier estimated. The resulting change revised earlier growth rates in the dollar and the rouble to a 2 percent annual rate. The net result of this revised data does not significantly affect the estimates of Soviet defense spending but it does alter the "burden of defense" for the Soviets from the previous estimate of 13 - 16 percent to 15 - 17 percent of their GNP. The key point to be made is this, the CIA and DIA state that there is about a five year lag between estimates and confirmation of the figures after they have been evaluated by US sources. In current dollars the DIA estimated that the Soviet defense budget doubled between 1970 and 1981. DIA reports suggest that annual spending by the Soviet Union (since 1983) has been going on at a 5 percent annual rate of growth. The CIA and the DIA agree that the Soviet defense procurement has increased 1 percent annually between 1975 and 1981. There is a disconnect between the two agencies however on the procurement estimate between 1981 and 1986. DIA calculates

a 3 to 5 percent annual increase while the CIA believes that the procurement growth has been virtually stagnant (5:34).

Building block approach. United States analysts have developed two formal methodologies for estimating the Soviet defense expenditures. The "building block" approach and the "residual method" attempt to calculate costs using two different approaches. The building block approach is developed by establishing cost estimates individually for various Soviet armed forces. This method breaks down the costs into the component parts such as personnel, procurement, construction, operating and maintenance and research and development. The CIA uses this approach to estimate Soviet defense expenditures in both roubles and dollars (20:23).

Residual Method. This method is quite intuitive in that defense related roubles are hidden in civilian budgets. The method requires that one subtracts out the known civilian programs and calculate the balance which is then assumed to be attributable to the defense budget. This is a very difficult method to cost out a program and the reliability of the results are suspect. As a note, the CIA has announced that, in the future, the estimate of Soviet defense spending will be stated in terms of roubles versus dollars to avoid erroneous comparison, or "politicizing" of the figures (3:44).

GNP vs NMP. The ability of Western analysts to calculate the growth or size of the Soviet economy is further hampered because the Central Statistical Administration of the Soviet Union compiles economic data in a different formula called a Net Material Product or NMP. This is in contrast to the methods that the non-communist nations used to calculate their economic production. Our inability to use the NMP as a valid economic indicator stems from the fact that (a) there are differences in coverages of economic measures between the GNP and the NMP, (b) the US doesn't have complete knowledge of what makes up the NMP or (c) the Soviet data is routinely stated in constant prices and is, thus, subject to wide price distortions (19:13). The main difference between the two indicators is a lack of value added in the production of most services, or a "capital consumption allowance. This accounts for approximately 25 percent of the GNP in 1970" (19:13).

Index number problem. The problem of converting between two countries' currency in order to place an equal value on a given commodity is called the index number problem. This index problem results from the relative difference in price and quality of the goods produced. This also causes difficulty in comparing the calculated cost of items in roubles and in dollars. When attempting to compare

the economy of the Soviet Union and the United States in roubles one sees a wider variance between the two if one prices both countries' goods in roubles than if one prices those same goods in dollars as a result of this index number effect. (18:2).

In many instances the comparison between the two economies is accomplished through the development of a geometric mean in which the exchange rates between the two currencies (considering the index number effect) is geometrically averaged to allow for the economic bias (18:2).

Defense Expenditures. The definition of defense expenditure should be clarified: it includes military equipment, construction, personnel, (excluding transfer payments in the form of pensions), operations and maintenance, military research, development, test and evaluation and defense related atomic defense programs (18:16). Any difference between the Soviet and the US definitions evolves from the fact that the Soviets normally include civil defense and civilian space programs within their economic figures (18:21). The US does not include these two areas.

Burden of Defense. Another definition which is basic to the understanding of the comparison between the two economies is the concept of the "burden of defense". This is the ratio of the value of military goods and services produced to the total value of goods and services produced by an economy when both defense and GNP are measured in indigenous currency terms" (18:21). In considering its estimate of the burden of defense the CIA does not include "subsidized weapon sales, support for surrogates such as Vietnam and Cuba, civil defense programs, dispersal and hardening of industrial sites, joint purpose projects such as city subways/communications" (10:23). The US calculation of Soviet rouble prices tend to do two things: overstate real growth and understate real cost. Also, the published World Bank tourist rates have very little relationship to the actual procurement costs of defense weapons (20:57). The CIA estimates that the error rate between the dollar and the rouble is in the area of 10 to 15 percent (20:60).

Additionally, another consideration should be taken into account; namely that the CIA generally creates a worse case scenario. For example, the CIA over values the manpower of the Soviet Union armed force (does not consider the lower level of training received by the Soviet Union)(20:70). With these methodologies and other considerations in mind, let's turn to the general economic trends.

Chapter Three

ECONOMIC TRENDS IN THE SOVIET UNION

Historical development. The ability of any country to carry out its domestic and foreign goals stands on the strength of its economic base. The history of the Soviet Union has been a tumultuous one which has seen economic growth rates that match the rebuilding countries of Western Europe since WWII. The Soviets have had the luxury of vast easily obtainable natural resources located in their country and a large labor force. The resources and labor are comparatively cheap as opposed to most Western nations. These have been the keys in the Soviet Union's success in being able to catch the United States militarily, to expand their industrial base, and to be able to at least meet minimal consumer demands (23:49). Historically, they have had poor productivity in industry. To compensate for lower worker productivity the government has provided massive inputs of additional labor, capital, and natural resources. The sources of labor have basically come from three areas: workers being transferred from agriculture, women, and an increase pool of pre-WWII children who came of working age. However, the Soviets are faced today with a problem that has reduced even these labor sources to drive the industrial economy. With the severe decline in the agricultural output, the Soviet Union can no longer afford to move additional people from the fields to the industries. Most of the Soviet women now work and are no longer a source for future untapped labor. Post-WWII birthrates were naturally very low because of the loss of over 20 million people during the war. Therefore, these three parts of the potential workforce are missing. The only increase that is foreseen in the Soviet Union is in the southern non-slavic areas in which poorly educated people live; people who would typically not have the level of education to work on an assembly line. The trend in the GNP in the USSR graphically tells the story.

Year	GNP
1960-70	5.1%
1971-75	3.7%
1976-80	2.7%
1981-84	2.6%

Table 1. ECONOMIC RATE OF GROWTH IN THE USSR (6:12)

The Soviet GNP had gained ground as a percentage of the United States' GNP from about 40 percent in the 1950's to about 60 percent in 1975. However, during the mid 1970's the Soviets experienced a severe slowdown in their economy and today they represent about 50 percent of our GNP. With a growth rate of only two percent in 1984, the Soviet standard of living has essentially stopped rising (15:142).

1961-65	1966-70	1971-75	1976-79
2.1%	4.3%	2.6%	1.7%

Table 2. USSR AVG ANNUAL RATE OF GROWTH PER CAPITA (19:22)

The slowdown in the Soviet economy has fueled inflation in the USSR. According to Gregory Grossman of the University of California, Berkeley, the USSR had to provide a cash infusion to a number of ailing enterprises. In the softer economy, the enterprises were not able to sell their goods. This lack of revenue would cause most prudent enterprises in a market economy to cut back on personnel and non-essential supplies. However, this thought does not have a place in the Soviet world. Instead the increased cash "found itself chasing after scarce goods" (15:143). According to Grossman, this additional money in the society has tended to realign the spread of income and has fueled the underground, or the "second economy", and has increased corruption among top Soviet officials (15:143).

Through the import of grain in 1979 from the United States, the Soviets were able to increase their production of meat and livestock herds. The embargo of grain in 1980 however, caused their meat production to fall by 2.6 percent (1:88). Along with these decreasing trends has been the corresponding decline in farm productivity. The rate grew at "an average rate of about 3.5 percent per year in the 1960's, fell to a rate of 2.1 percent in the period 1970-75, and 1.4 percent in 1975-80. Labor productivity in industry

experienced a severe drop in the late 1970's from a 3.5 percent rate in the late 1960's up to a 4.3 percent rate in the early 1970's to a 1.9 percent rate at the end of the decade (1:89).

Agricultural problems. One of the chief economic woes which was previously mentioned above centers around has been in the agricultural industry. During the years of 1979 and 1980 agricultural output fell by 4 percent and 3 percent respectively (21:1). While conservative thought would like to put the entire weight of guilt on Soviet style communism, much of the blame is on the fluctuating and generally poor weather that the Soviet Union endures from year to year. In 1965 to 1980, the capital invested in agriculture was increased by over 300 percent in an attempt to try to turn the trend around. In the same period of time, the cost of production in the industry rose by over 50 percent. The bottom line was that agriculture - through massive dosages of people, capital and resources - 38 percent of its capital and 25 percent of its workforce - still could not respond (23:52). Now with easily obtainable resources rapidly disappearing, the Soviets are suffering from their shortsightedness having not developed long term solutions to ensuring a ready supply of natural resources. It will take many more roubles and time before new reserves can be discovered. The "development of offshore reserves appears to be more than a decade away" (23:58). Examples abound - the mining of coal in the Donets Basin in the Ukraine has become uneconomical (K:143). Additionally, the Soviet Union lacks the ability to transport vast loads of commodities or resources across the massive expanse of its own territory. The Soviets have been caught in a cycle of "dedicating resources to the production of raw materials, which has meant less resources for the development of advanced industry, which in turn means that advanced industries continue to fall behind" (17:55).

Problems of efficiency. The Soviet system lacks efficiency. They must invest 2.75 times as much labor, 2.2 times as much land and 2.0 times as much capital as the United States to produce an equivalent unit of GNP (23:54). Soviet productivity has declined largely because of a lack of incentives and resource misallocation. The age of the physical plant and over 40 percent of the equipment in industry is over 20 years old. To keep the plant running with that age of equipment over 20 percent of the industrial personnel are repairmen (23:54).

Soviet attempts at reform. The CIA predicts that the Soviet Union has entered a long period of faltering economic growth and the traditional resources that the Soviets use to revive their economy are not going to be available (23:56). It now appears that their only alternative will be to

improve the productivity of the Soviet worker. There will be difficulty in developing incentives in their command economy without allowing some market economy philosophy to be considered. Not everyone is optimistic about the ability of their economy to respond. Sovietologist Seweryn Bialer of Columbia University states, "The Soviet Union has more reforms than any other country in the world, but they don't change the system. They're absorbed by the system" (15:142). However, the Soviets are presenting a picture of change.

As the Soviet Union moved into the 1980's the dominant theme became one of reform. It has become more evident to the Soviets that some type of reform was going to have to take place to allow the Soviet Union to continue its world commitments and to stay even with the United States militarily (14:24). The decline of economic output coupled with the loss of productivity of the Soviet worker would have been solved under the traditional Soviet model through massive inputs of capital investment, manpower, and natural resources. The capital investment was used to expand and to build new facilities, a reflection of the "extensive" economic philosophy of the Soviet Union an insatiable need for expansion. However, as was discussed earlier, this traditional method of economic repair is no longer available. The rapid buildup after WWII began to decline. Due to poor capital investment, a command economy, and poor resource development, the world is now seeing the maturity of the Soviet economy and the diminishing returns on capital investment.

The Eleventh Five Year Plan (FYP), 1981-85, tried to pick up where the results of the dismal Tenth FYP finished. The efforts to increase national income in the years of 1976-80 were not successful. The Soviets approached the next five years with a modest plan for growth. The planned agricultural output was set at a 4.8 increase; planned grain harvest increase of 3.0 to 3.5 percent; and real income per capita up 3.0 to 3.4 percent (21:6). The intent was to establish a program of "intensification" in which Secretary General Gorbachev will later stress (in 1985) the human factor and exactingness to spur on the productivity of workers and party officials as well (6:11). The currently stated goal is to produce more consumer oriented goods in order to show the people that the system does work. The ultimate goal is to create a happier worker who in turn will be, at least theoretically, more productive.

In July 1983, the Soviet Central Committee/Council of Ministers proposed yet another reform aimed at the 1984-85 timeframe in five ministries. These reforms were aimed at two all-union machine-building industries and three republic level industries. Fyodor I. Kushnirsky the former Section Head and Director of Econometric Projects at the Scientific

Research Institute for Planning and Norms of the USSR State Planning Committee in Kiev, in his article "The Limits of Soviet Reform", believes that these reforms may well have been started and implemented by Brezhnev had he not died. The reform centers on changes in "the computation of enterprise incentive funds - the bonus fund, the social fund, and the development fund - and in the way enterprises will be authorized to spend them" (12:39). Basically, the enterprises will be more actively involved in all stages of planning. The plan does not break new ground on the economic frontier, but instead it is designed to make the old system work. The top success indicator will be "sales revenue, corrected for the proportion of delivery targets" (12:39). "The intent is to tie wages and bonuses to the results of enterprise operations and to search for methods of manipulating appropriate funds to increase labor productivity. These relate to the practice of normative planning" (12:40). The reform means that, "If an enterprise realizes a saving of part of its total wage bill, the savings will no longer have to be returned to the state budget. Instead, the enterprise will be allowed to pay up to 24 percent of base wages in additional money to workers who occupy key positions and who improve their skills, and up to 50 percent in extra pay to engineers and other white collar employees" (12:41). Kushnirsky seems to be doubtful that the system will be successful and the true results difficult to determine in the near future. He believes that the system will "be hampered by restrictions on layoffs and shortages of inputs. If agriculture fails to meet the demands for more inputs and consumer goods, the authorities will be forced to impose limitations on the growth of the average rates. This will undercut normative planning of wages which anticipates higher wages with higher output" (12:43).

Intensification Program. Nevertheless, Gorbachev is pressing on with his "intensification" program (17:9). Changes in order to increase productivity include the introduction of advanced technologies. But this and other reforms are not really new to the Soviet system for they have been tried in the past with mixed success. Among them are: "...limited reduction of centrally controlled performance indices for the enterprise; expansion of the system of research-production associations initiated more than a decade ago; formation of inter-branch administrative entities, and restricted changes in price fixing" (6:13). The highly centralized, bureaucratic system which had been developed by Stalin does not enhance the introduction of technological innovation (6:13). The economy in 1984 continued to be at a low point, in that the growth rate of the Soviet national income in 1984 and 1985, stood at 2.4 and 3.1 percent annually, the lowest level in post-WWII times. The GNP for 1985 was a modest 2.6 percent. The

logical question then becomes, if this highly centralized and bureaucratic system is the stumbling block to greater productivity and economic growth then why can't the system become more open and innovative? The response could be that the Soviet form of socialism exists for the benefit of the privileged class and not the workers and unions (9:37). The protection of the elite class requires rigid centralization and control.

Gorbachev's intensification program continues on with the concept of exactingness. This concept basically established a standard of performance for all people both public and private. If one's performance is not satisfactory then action will be taken to remove an individual from his job. For instance, all seven all-union ministries have received new chiefs since the arrival of Gorbachev. This certainly will gain the public's attention (6:14). However, his economic proposals appear to be little more than a revisit of old concepts . Gorbachev appears to be holding to the Leninist theme of keeping the political banner held high over the economic one.

Bleak economic backdrop. The results for the Eleventh FYP are in and reflect the difficult times that are ahead for the Soviet decisionmakers.

"The preceding Five Year Plan (1981-1985) had explicitly targeted an increase in the share of the consumption fund, at the expense of investment. But when anticipated revitalization and increased effectiveness in the investment sphere did not materialize, it proved necessary to increase investments and make cutbacks in consumption. The share accorded to consumption declined from 76 percent in 1980 to 73 percent in 1984. Over the same period, the annual rate of growth in new housing declined from 8 percent to virtually nil. Moreover, the share of investment going to (consumer producing) industries, which was supposed to rise in 1981-85, sank to a postwar low of 4 percent while the share of investment going to (manufacturing producer goods) was at 31.5 percent. The share of investment in housing construction, health care, trade, and other social and consumer sectors of the Soviet economy fell from 35.4 percent of total investment in 1960-70 to 29.7 percent in 1981-84. During the same period, the share of total investment going to light industry and the food industry fell from 12.2 percent to 10 percent" (14:23-24).

Its against this picture that the Soviet's are formulating their plans for the next five years. This rather bleak picture of the Soviet economy must be kept in mind in analyzing its relationship with the USSR defense machine.

Chapter Four

SOVIET DEFENSE SPENDING

Defense growth. The rate of growth in the Soviet defense budget was estimated to be in the range of 4 to 5 percent before 1976, decreased to an annual rate of 2 percent between 1976 and 1982 and then realized an increase to 3 to 5 percent between 1982 and 1985 (5:33). In 1983, the CIA revised its earlier estimates which had placed Soviet spending at approximately 4 to 5 percent annually. The new figures, as had been mentioned earlier in this paper, showed a growth rate of 2 percent annually. These estimates do not change the estimate of the defense burden which ranged from 15 to 17 percent of the GNP. This was consistent with previous findings between the CIA and DIA which demonstrated that the defense industry had a higher share of inflation than the rest of the civilian economy. Most recent reports indicate that the Soviets have increased their defense spending by 5 percent annually since 1983 (23:57). Both agencies are in agreement that the Soviet budget for procurement increased by 1 percent annually between 1975 and 1981. And then in the period between 1981 and 1986 the DIA concludes that procurement increased by a 3 to 5 percent rate annually. The burden of defense of the Soviet Union has historically been around the 12 to 14 percent of their GNP level when their force structure includes the same elements as in the United States. However, Sovietologists such as Edward N. Luttwak state that if all of the defense related entities were accounted for such as border guards, KGB, security forces, etc. the percentage would be closer to 50 percent. Soviet scientist and dissident Andrei Sakharov states that the figure would be closer to 40 percent (23:62).

The CIA as well as other agencies speculated on the reasons for the slowdown in the Soviet defense spending during the 1976 to 82 time period. These ideas include pressure to reduce military spending to aid a weakening economy, a true desire to limit the arms race, or possibly just because the Soviet weapons had just entered the end of production cycles and the research and development process had no new weapon systems ready for production (23:62). As an additional note the Soviet defense decline occurred ironically at the same time that the Soviet economy soured (20:77). Veteran arms negotiator, Paul Nitze, sincerely

believes that the Soviets are in trouble. He believes that they are desperate to contain their massive defense budget. He believes that the drop of the standard of living for the average Soviet has forced the government to find ways to pump more money into the consumer side of the house (13:11). No decisive answer can currently be found. One must be careful in making purely monetary comparisons between defense expenditures because the value of one currency certainly does not necessarily equate to another. Even within the Soviet Union the most productive segment is the military industry and therefore the value of a rouble is higher than if it were spent in the civilian sector.

Although it is true that the Soviet defense spending leveled off, it must be remembered that it leveled off at a very high rate of expenditure. The Soviet military has access to "the highest quality raw materials for defense; transportation and distribution of raw materials; best industry workers; national pool of research talent and the most advanced machinery "(10:103).

The Soviets have made enormous strides during the past couple of decades at greatly expanding their forces. Senator William Proxmire (D.-Wis) stated that during the period 1977 to 1983 the Soviets purchased 1,100 intercontinental ballistic missles, 700 submarine launched ballistic missles, 300 bombers, including Tu-22M/Tu-26 Backfires, 5,000 fighters, including Mig 23/27 Floggers, 15,500 tanks, including T-72s, and substantial numbers of naval surface combatants and submarines (10:101).

In fact, since 1964 the Soviet defense industry has increased its manpower 33 percent; expanded its weapons production facilities by 60 percent; increased the deployment of ICBMs by 600 percent; increased its battlefield nuclear forces by 300 percent; increased its artillery firepower of its divisions by 200 percent; increased the weight of ordnance that TAC air forces can deliver deep in NATO territory by 900 percent; increased missile launchers on ships and subs by 400 percent; and has upgraded many series of surface ships, nuclear powered subs, and aircraft (23:63).

Western defense acquisitions. Another issue which should be mentioned is the degree to which the Soviets are able to covertly and in some cases overtly obtain defense plans on the construction of United States' military hardware. Consider the following as to when the United States system came into being and when the Soviet equivalent appeared: C5A Galaxy, first flight 1968--new Soviet heavy transport under development, 1980s; C-141 transport, first flight 1963--Il-76, 1971; Boeing 747, first flight 1969--Il-86, late 1976; Redeye AA missile, in service 1964--SA-

7, c. 1967; Tow and Milan anti-tank missiles, 1970-72--AT-4 and AT-5, c. 1977; M-16 5.56-mm rifle, used in Vietnam, 1962--AK-47 5.45-mm rifle, 1978 (2:185). "The total number of claims relating to militarily significant Soviet acquisitions is now quite substantial: the 1984 edition of Soviet Military Power refers to an analysis of nearly 800 such cases, of which more than half relate to electronics, computing, and production equipment" (2:182). The Soviet military is not pleased with its dependence on the western world for the designs of its weapon systems. As the elite class in the economic pecking order in the Soviet Union, the military is not anxious to have its defense budgets cut.

Soviet rhetoric. The trend of rhetoric coming out of the Soviet Union has led to additional confusion for the western press as well as the Soviet people. For example, a statement back in 1979, by N. K. Tarasov at the Mutual Balanced Force Reduction Talks in Vienna, Austria on 19 July 1979, stated, "The Soviet Union will...ensure that the enormous material means which are now used for the manufacture of arms are switched to the satisfaction of the material and cultural requirements of the people" (23:66).

In a speech to the CPSU Plenum on 22 Nov 1982, Andropov, stated. "The plan for 1983 attaches much importance to the growth of production and to the improvement of quality of consumer goods" (23:66). This statement comes at a time when the Soviet were about to significantly increase their defense spending in the following year. In contrast to this at nearly the same time, Brezhnev met with 500 generals and officials of the ministry of defense and endorsed the military's claim for top priority in funding saying "The Central Committee of the Party is taking measures to ensure that you will never be in need" (23:66).

This speech appeared to forewarn of the subsequent request from Chernenko who in a November 1984 speech called for the strengthening of the Soviet defense capability. The TASS news agency responded on 28 November 1984 with a statement that the military spending was to be increased by 12 percent (23:67). Western analysts view this as a response to President Reagan's announcement of the Strategic Defense Initiative (4:264).

In summary, although the Soviet defense spending leveled off for a period of years, it leveled at a plateau which still provided additional defense expansion. But now with the civilian industry declining, can the Soviets afford to invest more in defense? This is the Soviet paradox, a topic which will be discussed next.

Chapter Five

THE SOVIET PARADOX

Guns vs butter. The apparent paradox and central thesis of this paper is that the Soviets are still conducting military expansionist efforts in parts of the world while the social system of Russia has suffered from economic, social, and political setbacks. The Soviet Union continues to be an expansionist power. The ability to understand how these two seemingly opposing images of economic plight and military expansionism exist is crucial to the formulation of our foreign policy toward the Soviet Union in the future.

The ultimate military/industrial complex. The relationship between the Soviet defense industry and the economy are clouded at best. The Soviet military system is, in many respects, closely aligned to their civilian economy. Julian Cooper of the Center for Russian and East European Studies at Great Britain's University of Birmingham, stated that virtually all nine defense industry ministries also produce civilian goods. Within the defense industries they produce over one-third of the washing machines, one-half of all refrigerators, sixty percent of all electric trams and motorcycles, fifteen percent of tractors, and nearly all of the radios, tape recorders, and record players. Cooper does not necessarily feel that the Soviet defense efforts are a major drain on the general economy (11:43). His premise is that the defense and private economies are so intertwined that one does not drain the other's resources.

In fact, managers and scientists move between both industries sharing and expanding ideas for new applications (11:44). In 1984, some of the best performing defense production ministers were moved into the top positions in five civilian industrial ministries to improve the managerial effectiveness in meeting supply contracts (11:49).

The Eleventh Five Year plan. It is possible to presume that an increase of investment in the civilian sector will enhance through technological advances, the defense industry. The deputy minister for military procurement has commented that "...the poor performance of the civilian

economy is a threat to military procurement objectives" (5:35). The improvement of the Soviet civilian economy serves the interests of the military as well.

In the immediate future, Gorbachev has announced in his first Five Year Plan (1986-1990) that there will be a modest 3.5 percent annual growth. The vast majority of this growth will be centered in the machine building sector which concentrates on electronics, computers, and machine tool industries. The apparent thrust is to increase the slacking productivity of the civilian industry. Ministerial Chairman Ryzhkov announced that there will be a slower rate of increases for the energy and machine building sectors. However, there will be a slower rate of planned growth in the agricultural and consumer investment (5:35). The lack of investment in the immediate future does not pose a problem according to a Joint (American and European) Economic Committee. They stated,

"In view of the immense sunk costs for plant and installed equipment in the defense production facilities, and the fact that these cannot be readily converted to civilian use, the industrial modernization goals are unlikely to significantly impede the completion of the major deployments of strategic weapons that the Soviets have programmed through the 1980s. Full scale lines are producing the newest generation of Soviet weapons systems including, T-80 tanks, cruise missiles, Su-27 fighters, the Blackjack bomber, and the SS-25 ICBM" (5:35).

The end result is that the Committee feels assured that the defense industry has the economic base and the industrial physical plant to continue with a military modernization program even if investment is now being turned toward the civilian sector.

SOVMOD econometric model. Just how much of a burden to the civilian economy is the investment to the defense industry? A study of the Wharton Econometric Model of the Soviet Union (SOVMOD IV) shows the theoretical economic impacts of various levels of investment while assuming different levels of productivity and defense investment.

	Share of Def. in GNP	Share of Def. Increment in GNP Inc.	Share of Def. Procurement Inc. in MBMW Inc. *
Baseline			
1980-85	14	16	35
1985-90	15	21	54
Baseline: High defense			
1980-1985	16	29	45
1985-1990	20	44	78
Baseline: Low defense			
1980-1985	13	9	26
1985-1990	12	10	34
Low Productivity			
1980-1985	14	23	47
1985-1990	16	32	82
Low Productivity			
High Defense			
1980-1985	17	40	60
1985-1990	22	65	117
Low Productivity			
Low Defense			
1980-1985	13	12	34
1985-1990	13	15	51

* The MBMW increment is the increment to that part of machine-building and metal-working output going to final demand.

Table 3. AVG INCREMENTAL BURDEN OF DEFENSE (%)

The SOVMOD model of the Soviet economy is one of the most sophisticated models available for evaluation. It was developed by Herbert Levine and Daniel Bond for the Wharton Econometric Associates in order to evaluate various levels of defense spending under varying conditions of productivity and economic growth.

"The model assumes 4.5 percent as the current share of military spending in GNP, and then investigates the effects of a high level of 7.5 percent and a low level of 2.5 percent, under two alternative rates of factor productivity growth, "low" (0.47 percent in the 11th Plan and 0.31 in the 12th) and "baseline" (1.35 percent in the 11th Plan and 0.97 percent in the 12th)" (21:29).

The general results show that the growth of defense expenditures have only a small impact on the growth of the GNP, industry and agriculture. The reason for this is that

the amount of investment that is affected by a change in defense expenditures is small when compared to the size of the capital stock in the economy (1:104).

The affect of variance in the Soviet defense expenditures has a much greater impact on investment growth. In projections by Daniel Bond and Herbert Levine a "high 7.5 percent growth per year of defense expenditures reduces the rate of growth of consumption per capita, in the 1980-1985 period, to 1.25 percent per year compared to a baseline rate (of a CIA assumed rate of 4.5 percent annually) of 1.95 percent" (1:104). If the defense expenditures are reduced to a 2.5 percent growth per year the growth per capita consumption rises to 2.31 percent per year. If a 7.5 percent defense growth were maintained the per capita consumption rate would grow at a very low 0.41 annual percent rate (1:104). If the past rate of 4.5 percent growth in defense continues with a low productivity growth rate, the per capita consumption would be 0.87 per year in the 1980-85 timeframe and 0.14 percent growth in the second half of the 1980s. In view of the difficult circumstances in which the Soviet people have been living, especially in relationship to other eastern European communist nations, a decision by the Soviets to increase their defense growth rate would be a very difficult decision. However, if the Soviets were to decrease the rate of defense expenditures from 4.5 percent to 2.5 percent the per capita consumption rate would rise to the 1.24 percent rate using the Soviet Eleventh FYP (1981-1985) distribution (1:105).

The data in the table above demonstrates that the incremental effects of variance in defense expenditures are greater than the average effects. Assuming an annual baseline growth of 4.5 percent, the burden of defense in the GNP rises from 14 percent in 1980 to 15 percent in 1990. However, the share of the increment to defense expenditures in the increment to GNP (column 2) increases from 16 to 21 percent between the two periods. Additionally, based upon this model, we see that if this 4.5 percent growth is true, that the increment in the procurement of defense equipment increases from 35 percent of the increment in machine-building and metal-working output in the 1980-90 timeframe to over 54 percent in 1985-90. If the Bond and Levine model is correct, Soviet decisionmakers will have a difficult time justifying that more than half of procurement will go to defense when Gorbachev has his goal on increasing productivity (1:105).

Chapter Six

CONCLUSION

Soviet ideologies have in the past left them firmly entrenched in Marxist-Leninist theories of expansionism. Today, there are possibilities that many of the old theories are being replaced because of internal problems and fact-of-life changes within the Soviet Union.

The enormous growth that the Soviet Union has experienced since WWII is now coming to an end. While the majority of Europe has experienced similar recovery growth, they have also planned for future economic avenues which the Soviet Union has not done. This is particularly true in the area of natural resources where the Soviets have consistently exploited easily developed deposits while postponing investment for longer range requirements. The same has been true in industry where expansion of physical industrial plants has consumed so much of the budget that replacement of aging capital investments has been ignored.

The Soviets are now faced with the problem of a maturing economy and an unenthused working force whose productivity is still very poor. Gorbachev's goal of increasing investment in computers and industrial equipment are pointed towards improving the mechanical efficiency of the Soviet Union's industry. His "exactingness" program is aimed at removing members (primarily managers) from positions of supervision if they don't prove to be productive. Both of these reforms will serve to improve the growth of the general economy.

Historically, the defense and civilian economies have essentially been one. The free exchange of technology and personnel between industries has enabled both industries to benefit from funding regardless of where it was targeted. However, now with the new thrust on productivity, the maturity of the economy, and the massive defense build-up of the 1970s, the identity of the two economies may become more clear. Gorbachev's campaign to improve the international image of the Soviet Union has the drawbacks of exposing to the Soviet people just how far their standard of living is behind the West's. His concentration should support his program of "intensification" thus improving the lot of the Soviet citizen.

The capability of the Soviets to support a massive expansion in their military program while conducting an intensification program are suspect. The credibility of the Gorbachev regime would fall into serious jeopardy if the increase in the per capita consumption falls below 1 percent. However, based upon a CIA estimate, even with a slight growth of 2 to 2.5 percent in the economy the Soviets will still be able to realize a modest growth in their standard of living and be able to deploy major weapon systems such as: military space systems, strategic cruise missiles, a strategic bomber, another generation of strategic ballistic missiles, a large transport aircraft, and a large carrier for conventional aircraft (10:104).

The assumption that the Soviets would not be able to bear a decline in the standard of living, however, has to be characterized as a "western" viewpoint. Certainly, we would not want to live through the typical Soviet lifestyle for very long for they have lived through much worse times in the past.

It is this author's premise that unless productivity significantly improves, the sizing of the defense budget will become a function of the general health of the Soviet economy as predicated on the fact that the Soviet Union has realized its economic recovery from WWII and that economically it must compete with the rest of the world to maintain a reasonable standard of living for its citizens.

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